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Date: Thu,  3 Nov 94 22:00:18 PST
From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>
Errors-To: Info-Hams-Errors@UCSD.Edu
Reply-To: Info-Hams@UCSD.Edu
Precedence: List
Subject: Info-Hams Digest V94 #1188
To: Info-Hams


Info-Hams Digest            Thu,  3 Nov 94       Volume 94 : Issue 1188

Today's Topics:
                    How to find an old callsign??
                         License Arrived :-)
                         orbs$308.1of2.amsat
                          orbs$308.2l.amsat
                         orbs$308.2of2.amsat

Send Replies or notes for publication to: <Info-Hams@UCSD.Edu>
Send subscription requests to: <Info-Hams-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party.  Your mileage may vary.  So there.
----------------------------------------------------------------------

Date: 3 Nov 1994 16:50:02 GMT
From: mikef@asia.NoSubdomain.NoDomain (Michael Friedman)
Subject: How to find an old callsign??

Prior to WWII my grandfather, long a silent key, was
a licensed ham.  He was responsible for my interest
in radio at an early age and I would like to find out
what his call was back then.  I have very little information
other than his name.  Does anyone have old callbooks
from the 30's or 40's or know of some way to reference
this information?

Any reply via email would be appriciated!  <mikef@ctron.com>

Thanks,

Mike Friedman, WB2WNX
```

Date: Thu, 3 Nov 1994 21:02:29 GMT
From: dbasinge@nickel.ucs.indiana.edu (Mike Basinger)
Subject: License Arrived :-)

The wait is over, finally!!! My Tech No-Code license just came in.

My callsign is N9YYO.

Tested: October 1,1994
Effective Date: October 26, 1994
Arrival Date: November 3, 1994

4 weeks and 5 days, the FCC is speeding up.

Now to start learning code, andjoin the ARRL.

73's,
Mike, N9YYO

--
Mike Basinger [N9YYO]
dbasinge@nickel.ucs.indiana.edu
dbasinge@indiana.edu (BinHex & MIME accepted)
"Not speaking for Indiana University"

Date: 4 Nov 94 03:43:00 GMT
From: ray.hoad@drig.COM (Ray Hoad)
Subject: orbs$308.1of2.amsat

SB KEPS @ AMSAT $ORBS-308.O
Orbital Elements 308.OSCAR

HR AMSAT ORBITAL ELEMENTS FOR OSCAR SATELLITES
FROM WA5QGD FORT WORTH,TX November 4, 1994
BID: $ORBS-308.O
TO ALL RADIO AMATEURS BT

```
Satellite: AO-10
Catalog number: 14129
Epoch time:      94289.48195497
Element set:     324
Inclination:       26.8030 deg
RA of node:       302.7931 deg
Eccentricity:    0.6025932
```

```
Arg of perigee:   219.6206 deg
Mean anomaly:      75.3706 deg
Mean motion:    2.05881540 rev/day
Decay rate:      -3.48e-06 rev/day^2
Epoch rev:            8528
Checksum:              313

Satellite: UO-11
Catalog number: 14781
Epoch time:      94306.54771861
Element set:     750
Inclination:       97.7832 deg
RA of node:       314.7828 deg
Eccentricity:    0.0011456
Arg of perigee:   182.0759 deg
Mean anomaly:     178.0401 deg
Mean motion:   14.69263749 rev/day
Decay rate:       2.95e-06 rev/day^2
Epoch rev:           57062
Checksum:              332

Satellite: RS-10/11
Catalog number: 18129
Epoch time:      94306.23275448
Element set:     980
Inclination:       82.9278 deg
RA of node:       226.8003 deg
Eccentricity:    0.0012215
Arg of perigee:     7.5238 deg
Mean anomaly:     352.6096 deg
Mean motion:   13.72343666 rev/day
Decay rate:        5.3e-07 rev/day^2
Epoch rev:           36884
Checksum:              311

Satellite: AO-13
Catalog number: 19216
Epoch time:      94301.75974551
Element set:     990
Inclination:       57.6973 deg
RA of node:       223.3019 deg
Eccentricity:    0.7241598
Arg of perigee:   353.4584 deg
Mean anomaly:       0.6898 deg
Mean motion:    2.09725736 rev/day
Decay rate:      -4.32e-06 rev/day^2
Epoch rev:            4881
Checksum:              339
```

```
Satellite: FO-20
Catalog number: 20480
Epoch time:      94305.82580970
Element set:     744
Inclination:       99.0591 deg
RA of node:        71.7772 deg
Eccentricity:    0.0541319
Arg of perigee:    27.8182 deg
Mean anomaly:     335.0790 deg
Mean motion:   12.83227521 rev/day
Decay rate:       -2.2e-07 rev/day^2
Epoch rev:           22178
Checksum:              302

Satellite: AO-21
Catalog number: 21087
Epoch time:      94306.19349617
Element set:     534
Inclination:       82.9453 deg
RA of node:        40.5773 deg
Eccentricity:    0.0036906
Arg of perigee:    59.7868 deg
Mean anomaly:     300.6895 deg
Mean motion:   13.74546308 rev/day
Decay rate:        9.4e-07 rev/day^2
Epoch rev:           18854
Checksum:              341

Satellite: RS-12/13
Catalog number: 21089
Epoch time:      94304.91867598
Element set:     749
Inclination:       82.9229 deg
RA of node:       270.0396 deg
Eccentricity:    0.0030770
Arg of perigee:    88.3301 deg
Mean anomaly:     272.1381 deg
Mean motion:   13.74048713 rev/day
Decay rate:        4.1e-07 rev/day^2
Epoch rev:           18742
Checksum:              319

Satellite: ARSENE
Catalog number: 22654
Epoch time:      94304.21589819
Element set:     294
Inclination:        2.1346 deg
```

```
RA of node:        92.2806 deg
Eccentricity:    0.2911591
Arg of perigee:   196.0370 deg
Mean anomaly:     154.2027 deg
Mean motion:    1.42204230 rev/day
Decay rate:       -7.4e-07 rev/day^2
Epoch rev:             313
Checksum:              262

/EX
SB KEPS @ AMSAT  $ORBS-308.D
Orbital Elements  308.MICROS

HR AMSAT ORBITAL ELEMENTS FOR THE MICROSATS
FROM WA5QGD FORT WORTH,TX November 4, 1994
BID: $ORBS-308.D
TO ALL RADIO AMATEURS BT

Satellite: UO-14
Catalog number: 20437
Epoch time:      94306.22011244
Element set:      49
Inclination:       98.5846 deg
RA of node:        29.0804 deg
Eccentricity:    0.0011339
Arg of perigee:   141.8391 deg
Mean anomaly:     218.3601 deg
Mean motion:   14.29861125 rev/day
Decay rate:        4.1e-07 rev/day^2
Epoch rev:           24931
Checksum:              274

Satellite: AO-16
Catalog number: 20439
Epoch time:      94305.78065412
Element set:     847
Inclination:       98.5939 deg
RA of node:        30.0322 deg
Eccentricity:    0.0011445
Arg of perigee:   143.7940 deg
Mean anomaly:     216.4018 deg
Mean motion:   14.29915368 rev/day
Decay rate:        6.8e-07 rev/day^2
Epoch rev:           24926
Checksum:              312

Satellite: DO-17
Catalog number: 20440
```

```
Epoch time:      94306.77106189
Element set:     848
Inclination:       98.5950 deg
RA of node:        31.3821 deg
Eccentricity:    0.0011784
Arg of perigee:   140.2955 deg
Mean anomaly:     219.9092 deg
Mean motion:   14.30055582 rev/day
Decay rate:        6.6e-07 rev/day^2
Epoch rev:           24942
Checksum:              309

Satellite: WO-18
Catalog number: 20441
Epoch time:      94306.18916627
Element set:     851
Inclination:       98.5947 deg
RA of node:        30.7977 deg
Eccentricity:    0.0012219
Arg of perigee:   142.5095 deg
Mean anomaly:     217.6946 deg
Mean motion:   14.30028902 rev/day
Decay rate:        6.4e-07 rev/day^2
Epoch rev:           24934
Checksum:              319

Satellite: LO-19
Catalog number: 20442
Epoch time:      94305.24844492
Element set:     846
Inclination:       98.5955 deg
RA of node:        30.1614 deg
Eccentricity:    0.0012669
Arg of perigee:   144.9499 deg
Mean anomaly:     215.2516 deg
Mean motion:   14.30126982 rev/day
Decay rate:        6.7e-07 rev/day^2
Epoch rev:           24922
Checksum:              319

Satellite: UO-22
Catalog number: 21575
Epoch time:      94305.73077655
Element set:     553
Inclination:       98.4233 deg
RA of node:        17.3615 deg
Eccentricity:    0.0006852
Arg of perigee:   238.4474 deg
```

```
Mean anomaly:     121.6043 deg
Mean motion:   14.36939932 rev/day
Decay rate:        8.8e-07 rev/day^2
Epoch rev:           17283
Checksum:              317

Satellite: KO-23
Catalog number: 22077
Epoch time:      94306.55869351
Element set:     446
Inclination:       66.0865 deg
RA of node:       350.2728 deg
Eccentricity:    0.0015163
Arg of perigee:   254.0559 deg
Mean anomaly:     105.8785 deg
Mean motion:   12.86288515 rev/day
Decay rate:       -3.7e-07 rev/day^2
Epoch rev:           10458
Checksum:              325

Satellite: AO-27
Catalog number: 22825
Epoch time:      94305.74469677
Element set:     345
Inclination:       98.6352 deg
RA of node:        20.0890 deg
Eccentricity:    0.0008581
Arg of perigee:   161.8263 deg
Mean anomaly:     198.3225 deg
Mean motion:   14.27639832 rev/day
Decay rate:        5.2e-07 rev/day^2
Epoch rev:            5731
Checksum:              321

Satellite: IO-26
Catalog number: 22826
Epoch time:      94307.18731166
Element set:     343
Inclination:       98.6415 deg
RA of node:        21.5740 deg
Eccentricity:    0.0008968
Arg of perigee:   159.5084 deg
Mean anomaly:     200.6479 deg
Mean motion:   14.27745478 rev/day
Decay rate:        6.1e-07 rev/day^2
Epoch rev:            5752
Checksum:              323
```

```
Satellite: KO-25
Catalog number: 22830
Epoch time:      94305.62506761
Element set:     351
Inclination:       98.5405 deg
RA of node:        15.8064 deg
Eccentricity:    0.0011693
Arg of perigee:   130.9669 deg
Mean anomaly:     229.2533 deg
Mean motion:   14.28069272 rev/day
Decay rate:        2.7e-07 rev/day^2
Epoch rev:            5731
Checksum:              297

Satellite: 22828
Catalog number: 22828
Epoch time:      94307.23581565
Element set:     322
Inclination:       98.6384 deg
RA of node:        21.6452 deg
Eccentricity:    0.0010450
Arg of perigee:   144.9727 deg
Mean anomaly:     215.2141 deg
Mean motion:   14.28072932 rev/day
Decay rate:        5.8e-07 rev/day^2
Epoch rev:            2562
Checksum:              303

/EX

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Date: 4 Nov 94 03:47:00 GMT
From: ray.hoad@drig.COM (Ray Hoad)
Subject: orbs$308.2l.amsat

SB KEPS @ AMSAT  $ORBS-308.N
2Line Orbital Elements 308.AMSAT

HR AMSAT ORBITAL ELEMENTS FOR AMATEUR SATELLITES IN NASA FORMAT
FROM WA5QGD FORT WORTH,TX November 4, 1994
BID: $ORBS-308.N

DECODE 2-LINE ELSETS WITH THE FOLLOWING KEY:
1 AAAAAU 00  0  0 BBBBB.BBBBBBBB  .CCCCCCCC  00000-0  00000-0 0  DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM
```

TO ALL RADIO AMATEURS BT

```
AO-10
1 14129U 83058B   94289.48195497 -.00000348  00000-0  10000-3 0  3242
2 14129  26.8030 302.7931 6025932 219.6206  75.3706  2.05881540 85280
UO-11
1 14781U 84021B   94306.54771861  .00000295  00000-0  57799-4 0  7509
2 14781  97.7832 314.7828 0011456 182.0759 178.0401 14.69263749570623
RS-10/11
1 18129U 87054A   94306.23275448  .00000053  00000-0  41598-4 0  9801
2 18129  82.9278 226.8003 0012215   7.5238 352.6096 13.72343666368847
AO-13
1 19216U 88051B   94301.75974551 -.00000432  00000-0  10000-4 0  9907
2 19216  57.6973 223.3019 7241598 353.4584   0.6898  2.09725736 48819
FO-20
1 20480U 90013C   94305.82580970 -.00000022  00000-0  21675-4 0  7445
2 20480  99.0591  71.7772 0541319  27.8182 335.0790 12.83227521221781
AO-21
1 21087U 91006A   94306.19349617  .00000094  00000-0  82657-4 0  5346
2 21087  82.9453  40.5773 0036906  59.7868 300.6895 13.74546308188542
RS-12/13
1 21089U 91007A   94304.91867598  .00000041  00000-0  27063-4 0  7490
2 21089  82.9229 270.0396 0030770  88.3301 272.1381 13.74048713187425
ARSENE
1 22654U 93031B   94304.21589819 -.00000074  00000-0  00000 0 0  2947
2 22654   2.1346  92.2806 2911591 196.0370 154.2027  1.42204230  3134
UO-14
1 20437U 90005B   94306.22011244  .00000041  00000-0  32803-4 0   499
2 20437  98.5846  29.0804 0011339 141.8391 218.3601 14.29861125249314
AO-16
1 20439U 90005D   94305.78065412  .00000068  00000-0  43450-4 0  8472
2 20439  98.5939  30.0322 0011445 143.7940 216.4018 14.29915368249269
DO-17
1 20440U 90005E   94306.77106189  .00000066  00000-0  42455-4 0  8484
2 20440  98.5950  31.3821 0011784 140.2955 219.9092 14.30055582249429
WO-18
1 20441U 90005F   94306.18916627  .00000064  00000-0  41727-4 0  8519
2 20441  98.5947  30.7977 0012219 142.5095 217.6946 14.30028902249345
LO-19
1 20442U 90005G   94305.24844492  .00000067  00000-0  42696-4 0  8469
2 20442  98.5955  30.1614 0012669 144.9499 215.2516 14.30126982249221
UO-22
1 21575U 91050B   94305.73077655  .00000088  00000-0  44428-4 0  5534
2 21575  98.4233  17.3615 0006852 238.4474 121.6043 14.36939932172834
KO-23
1 22077U 92052B   94306.55869351 -.00000037  00000-0  10000-3 0  4462
2 22077  66.0865 350.2728 0015163 254.0559 105.8785 12.86288515104582
```

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AO-27
1 22825U 93061C   94305.74469677  .00000052  00000-0  38935-4 0  3453
2 22825  98.6352  20.0890 0008581 161.8263 198.3225 14.27639832 57313
IO-26
1 22826U 93061D   94307.18731166  .00000061  00000-0  42353-4 0  3436
2 22826  98.6415  21.5740 0008968 159.5084 200.6479 14.27745478 57523
KO-25
1 22830U 93061H   94305.62506761  .00000027  00000-0  28239-4 0  3517
2 22830  98.5405  15.8064 0011693 130.9669 229.2533 14.28069272 57319
22828
1 22828U 93061F   94307.23581565  .00000058  00000-0  40887-4 0  3223
2 22828  98.6384  21.6452 0010450 144.9727 215.2141 14.28072932 25625
NOAA-9
1 15427U 84123A   94307.03930489  .00000156  00000-0  10658-3 0   138
2 15427  99.0313 359.0322 0014622 184.5959 175.5079 14.13656685509874
NOAA-10
1 16969U 86073A   94307.05298793  .00000110  00000-0  65129-4 0  9158
2 16969  98.5081 311.8239 0012470 287.7512  72.2311 14.24913179422271
MET-2/17
1 18820U 88005A   94305.60019949  .00000044  00000-0  25400-4 0  4492
2 18820  82.5418 159.2904 0016536 149.9757 210.2343 13.84724772341370
MET-3/2
1 19336U 88064A   94305.82423409  .00000051  00000-0  10000-3 0  3456
2 19336  82.5420 226.2786 0015935 282.3924  77.5421 13.16969529301372
NOAA-11
1 19531U 88089A   94306.92920084  .00000084  00000-0  70157-4 0  8319
2 19531  99.1850 299.3254 0012433 100.7762 259.4815 14.13023331314736
MET-2/18
1 19851U 89018A   94304.75090803  .00000099  00000-0  75608-4 0  3466
2 19851  82.5205  35.0374 0013160 199.5240 160.5419 13.84375375286582
MET-3/3
1 20305U 89086A   94307.06313518  .00000044  00000-0  10000-3 0  1850
2 20305  82.5477 173.9666 0006922 323.8490  36.2149 13.04413394241005
MET-2/19
1 20670U 90057A   94305.93550968 -.00000012  00000-0 -24588-4 0  8470
2 20670  82.5431  99.0666 0016882 116.6981 243.5909 13.84179654219678
FY-1/2
1 20788U 90081A   94310.48731280  .00000218  00000-0  17298-3 0  1479
2 20788  98.8218 326.0093 0014160 342.2333  17.8230 14.01328916213639
MET-2/20
1 20826U 90086A   94306.21720900  .00000104  00000-0  81135-4 0  8563
2 20826  82.5252  36.1538 0014652  25.1396 335.0476 13.83592452206844
MET-3/4
1 21232U 91030A   94305.42810366  .00000050  00000-0  10000-3 0  7542
2 21232  82.5386  72.5677 0012204 198.9702 161.0960 13.16464319169415
NOAA-12
1 21263U 91032A   94307.04822313  .00000150  00000-0  86725-4 0  2503
2 21263  98.6047 331.6930 0012404 190.7103 169.3813 14.22462362180245
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MET-3/5
1 21655U 91056A   94305.27674907  .00000051  00000-0  10000-3 0  7520
2 21655  82.5542  19.9195 0012166 211.5128 148.5259 13.16834412154509
MET-2/21
1 22782U 93055A   94306.47723917  .00000061  00000-0  41865-4 0  3556
2 22782  82.5462  96.8569 0021506 196.0695 163.9778 13.83017377 59200
POSAT
1 22829U 93061G   94307.17379514  .00000069  00000-0  45523-4 0  3376
2 22829  98.6394  21.6041 0010266 146.4274 213.7573 14.28048195 57531
MIR
1 16609U 86017A   94306.20027051  .00010552  00000-0  14605-3 0  8332
2 16609  51.6469 215.6141 0001694 200.7360 159.3568 15.57710192497525
HUBBLE
1 20580U 90037B   94304.87170210  .00000763  00000-0  60806-4 0  5592
2 20580  28.4689  77.9145 0006349  77.8168 282.3127 14.90711580 49808
GRO
1 21225U 91027B   94307.23493206  .00005380  00000-0  11807-3 0  1621
2 21225  28.4612 346.4633 0003179 339.5528  20.4913 15.41547071 78415
UARS
1 21701U 91063B   94305.25597329  .00000300  00000-0  47441-4 0  6234
2 21701  56.9864 329.7969 0004697 100.1503 260.0066 14.96256871171459
/EX
```

Date: 4 Nov 94 03:45:00 GMT
From: ray.hoad@drig.COM (Ray Hoad)
Subject: orbs$308.2of2.amsat

```
SB KEPS @ AMSAT  $ORBS-308.W
Orbital Elements  308.WEATHER

HR AMSAT ORBITAL ELEMENTS FOR WEATHER SATELLITES
FROM WA5QGD FORT WORTH,TX November 4, 1994
BID: $ORBS-308.W
TO ALL RADIO AMATEURS BT

Satellite: NOAA-9
Catalog number: 15427
Epoch time:      94307.03930489
Element set:      13
Inclination:       99.0313 deg
RA of node:       359.0322 deg
Eccentricity:    0.0014622
Arg of perigee:   184.5959 deg
Mean anomaly:     175.5079 deg
Mean motion:   14.13656685 rev/day
Decay rate:       1.56e-06 rev/day^2
```

```
Epoch rev:           50987
Checksum:              326

Satellite: NOAA-10
Catalog number: 16969
Epoch time:      94307.05298793
Element set:     915
Inclination:       98.5081 deg
RA of node:       311.8239 deg
Eccentricity:    0.0012470
Arg of perigee:   287.7512 deg
Mean anomaly:      72.2311 deg
Mean motion:   14.24913179 rev/day
Decay rate:       1.10e-06 rev/day^2
Epoch rev:           42227
Checksum:              303

Satellite: MET-2/17
Catalog number: 18820
Epoch time:      94305.60019949
Element set:     449
Inclination:       82.5418 deg
RA of node:       159.2904 deg
Eccentricity:    0.0016536
Arg of perigee:   149.9757 deg
Mean anomaly:     210.2343 deg
Mean motion:   13.84724772 rev/day
Decay rate:        4.4e-07 rev/day^2
Epoch rev:           34137
Checksum:              323

Satellite: MET-3/2
Catalog number: 19336
Epoch time:      94305.82423409
Element set:     345
Inclination:       82.5420 deg
RA of node:       226.2786 deg
Eccentricity:    0.0015935
Arg of perigee:   282.3924 deg
Mean anomaly:      77.5421 deg
Mean motion:   13.16969529 rev/day
Decay rate:        5.1e-07 rev/day^2
Epoch rev:           30137
Checksum:              307

Satellite: NOAA-11
Catalog number: 19531
Epoch time:      94306.92920084
```

```
Element set:     831
Inclination:       99.1850 deg
RA of node:       299.3254 deg
Eccentricity:    0.0012433
Arg of perigee:   100.7762 deg
Mean anomaly:     259.4815 deg
Mean motion:   14.13023331 rev/day
Decay rate:        8.4e-07 rev/day^2
Epoch rev:           31473
Checksum:              287

Satellite: MET-2/18
Catalog number: 19851
Epoch time:      94304.75090803
Element set:     346
Inclination:       82.5205 deg
RA of node:        35.0374 deg
Eccentricity:    0.0013160
Arg of perigee:   199.5240 deg
Mean anomaly:     160.5419 deg
Mean motion:   13.84375375 rev/day
Decay rate:        9.9e-07 rev/day^2
Epoch rev:           28658
Checksum:              315

Satellite: MET-3/3
Catalog number: 20305
Epoch time:      94307.06313518
Element set:     185
Inclination:       82.5477 deg
RA of node:       173.9666 deg
Eccentricity:    0.0006922
Arg of perigee:   323.8490 deg
Mean anomaly:      36.2149 deg
Mean motion:   13.04413394 rev/day
Decay rate:        4.4e-07 rev/day^2
Epoch rev:           24100
Checksum:              282

Satellite: MET-2/19
Catalog number: 20670
Epoch time:      94305.93550968
Element set:     847
Inclination:       82.5431 deg
RA of node:        99.0666 deg
Eccentricity:    0.0016882
Arg of perigee:   116.6981 deg
Mean anomaly:     243.5909 deg
```

```
Mean motion:   13.84179654 rev/day
Decay rate:       -1.2e-07 rev/day^2
Epoch rev:           21967
Checksum:              348

Satellite: FY-1/2
Catalog number: 20788
Epoch time:      94310.48731280
Element set:     147
Inclination:       98.8218 deg
RA of node:       326.0093 deg
Eccentricity:    0.0014160
Arg of perigee:   342.2333 deg
Mean anomaly:      17.8230 deg
Mean motion:   14.01328916 rev/day
Decay rate:       2.18e-06 rev/day^2
Epoch rev:           21363
Checksum:              273

Satellite: MET-2/20
Catalog number: 20826
Epoch time:      94306.21720900
Element set:     856
Inclination:       82.5252 deg
RA of node:        36.1538 deg
Eccentricity:    0.0014652
Arg of perigee:    25.1396 deg
Mean anomaly:     335.0476 deg
Mean motion:   13.83592452 rev/day
Decay rate:       1.04e-06 rev/day^2
Epoch rev:           20684
Checksum:              283

Satellite: MET-3/4
Catalog number: 21232
Epoch time:      94305.42810366
Element set:     754
Inclination:       82.5386 deg
RA of node:        72.5677 deg
Eccentricity:    0.0012204
Arg of perigee:   198.9702 deg
Mean anomaly:     161.0960 deg
Mean motion:   13.16464319 rev/day
Decay rate:        5.0e-07 rev/day^2
Epoch rev:           16941
Checksum:              293

Satellite: NOAA-12
```

```
Catalog number: 21263
Epoch time:      94307.04822313
Element set:     250
Inclination:       98.6047 deg
RA of node:       331.6930 deg
Eccentricity:    0.0012404
Arg of perigee:   190.7103 deg
Mean anomaly:     169.3813 deg
Mean motion:   14.22462362 rev/day
Decay rate:       1.50e-06 rev/day^2
Epoch rev:           18024
Checksum:              255

Satellite: MET-3/5
Catalog number: 21655
Epoch time:      94305.27674907
Element set:     752
Inclination:       82.5542 deg
RA of node:        19.9195 deg
Eccentricity:    0.0012166
Arg of perigee:   211.5128 deg
Mean anomaly:     148.5259 deg
Mean motion:   13.16834412 rev/day
Decay rate:        5.1e-07 rev/day^2
Epoch rev:           15450
Checksum:              299

Satellite: MET-2/21
Catalog number: 22782
Epoch time:      94306.47723917
Element set:     355
Inclination:       82.5462 deg
RA of node:        96.8569 deg
Eccentricity:    0.0021506
Arg of perigee:   196.0695 deg
Mean anomaly:     163.9778 deg
Mean motion:   13.83017377 rev/day
Decay rate:        6.1e-07 rev/day^2
Epoch rev:            5920
Checksum:              336

/EX
SB KEPS @ AMSAT  $ORBS-308.M
Orbital Elements  308.MISC

HR AMSAT ORBITAL ELEMENTS FOR MANNED AND MISCELLANEOUS SATELLITES
FROM WA5QGD FORT WORTH,TX November 4, 1994
BID: $ORBS-308.M
```

```
TO ALL RADIO AMATEURS BT

Satellite: POSAT
Catalog number: 22829
Epoch time:      94307.17379514
Element set:     337
Inclination:       98.6394 deg
RA of node:        21.6041 deg
Eccentricity:    0.0010266
Arg of perigee:   146.4274 deg
Mean anomaly:     213.7573 deg
Mean motion:   14.28048195 rev/day
Decay rate:        6.9e-07 rev/day^2
Epoch rev:            5753
Checksum:              307

Satellite: MIR
Catalog number: 16609
Epoch time:      94306.20027051
Element set:     833
Inclination:       51.6469 deg
RA of node:       215.6141 deg
Eccentricity:    0.0001694
Arg of perigee:   200.7360 deg
Mean anomaly:     159.3568 deg
Mean motion:   15.57710192 rev/day
Decay rate:     1.0552e-04 rev/day^2
Epoch rev:           49752
Checksum:              286

Satellite: HUBBLE
Catalog number: 20580
Epoch time:      94304.87170210
Element set:     559
Inclination:       28.4689 deg
RA of node:        77.9145 deg
Eccentricity:    0.0006349
Arg of perigee:    77.8168 deg
Mean anomaly:     282.3127 deg
Mean motion:   14.90711580 rev/day
Decay rate:       7.63e-06 rev/day^2
Epoch rev:            4980
Checksum:              316

Satellite: GRO
Catalog number: 21225
Epoch time:      94307.23493206
Element set:     162
```

```
Inclination:       28.4612 deg
RA of node:       346.4633 deg
Eccentricity:    0.0003179
Arg of perigee:   339.5528 deg
Mean anomaly:      20.4913 deg
Mean motion:   15.41547071 rev/day
Decay rate:      5.380e-05 rev/day^2
Epoch rev:            7841
Checksum:              278

Satellite: UARS
Catalog number: 21701
Epoch time:      94305.25597329
Element set:     623
Inclination:       56.9864 deg
RA of node:       329.7969 deg
Eccentricity:    0.0004697
Arg of perigee:   100.1503 deg
Mean anomaly:     260.0066 deg
Mean motion:   14.96256871 rev/day
Decay rate:       3.00e-06 rev/day^2
Epoch rev:           17145
Checksum:              303
```

/EX

Date: Wed, 2 Nov 1994 19:49:08 GMT
From: ehare@arrl.org (Ed Hare (KA1CV))

References<1994Oct21.173653.24462@ke4zv.atl.ga.us> <31640029@hpcc01.corp.hp.com>,
<1994Nov2.014157.8236@ke4zv.atl.ga.us>
Subject: Re: CW Learning: Going slow. : (

Gary Coffman (gary@ke4zv.atl.ga.us) wrote:

: Seriously now, is there a correlation between the ability to use
: proper spelling and grammar and Morse Code copy? I seem to note
: a distinct lack of same from some of the best Code people. Or is
: that just happenstance as well?

I do Morse well. I know how to spell most words.

I fear we will need to look for other reasons to banish Morse Code from the bands. :-) :-)

73, Ed

--
Ed Hare, KA1CV, ARRL Laboratory, 225 Main, Newington, CT 06111
203-666-1541 ehare@arrl.org

Date: Wed, 2 Nov 1994 20:25:20 GMT
From: zlau@arrl.org (Zack Lau (KH6CP))

References<1994Oct31.195548.844@ke4zv.atl.ga.us> <1994Nov1.151053.6310@arrl.org>,
<1994Nov1.235758.7561@ke4zv.atl.ga.us>
Subject: Re: Contacting the MIR. Help!

Gary Coffman (gary@ke4zv.atl.ga.us) wrote:
: In article <1994Nov1.151053.6310@arrl.org> zlau@arrl.org (Zack Lau (KH6CP))
writes:
: >Gary Coffman KE4ZV (gary@ke4zv.atl.ga.us) wrote:
: >: In article <n7ryw.32.00171C3C@teleport.com> n7ryw@teleport.com (William Roth)
writes:
: >: >In article <1994Oct31.021040.1@ntuvax.ntu.ac.sg> asirene@ntuvax.ntu.ac.sg
writes:
: >: >>   Can anyone tell me the minimum requirement to work the MIR.
: >   ^^^^^^^
: >: Unfortunately, this is bad advice. An analysis of all possible passes
: >: for a LEO sat shows that it will spend the majority of the time you
: >: are in it's footprint at an angle of less than 30 degrees above the
: >
: >Gary's inappropriate and lengthy analysis deleted.

: I'm sorry you choose to reject AMSAT's best advice (it's not my
: analysis, the work was done by brighter and more capable people
: than me).

The fundamental problem with the analysis
is it doesn't answer the question,
which I also forgot to answer....

*** Can I work MIR with what I have? ***

*** Yes, I think people have even done it with a handheld transceiver **

: >   Minimal doppler

: In point of fact, doppler is changing most rapidly during the
: overhead portion of the pass as range and bearing from your
: station are changing most rapidly. Doppler changes are much

: less during the lower inclination parts of the pass.

I stand corrected on this point.

--
Zack Lau KH6CP/1   2 way QRP WAS
                            8 States on 10 GHz
Internet: zlau@arrl.org   10 grids on 2304 MHz

Date: Thu, 3 Nov 1994 19:59:41 GMT
From: gary@ke4zv.atl.ga.us (Gary Coffman)

References<1994Nov1.151053.6310@arrl.org> <CynJyM.8x0@icon.rose.hp.com>,
<1994Nov3.144408.13117@arrl.org>
Reply-To: gary@ke4zv.atl.ga.us (Gary Coffman)
Subject: Re: Contacting the MIR. Help!

In article <1994Nov3.144408.13117@arrl.org> zlau@arrl.org (Zack Lau (KH6CP))
writes:
>Greg Dolkas KD6KGW (greg@core.rose.hp.com) wrote:
>: Zack Lau (KH6CP) (zlau@arrl.org) wrote:
>: : Gary's analysis makes sense if you are interested maximizing the
>: : time you can work MIR, as opposed to just working them once.
>: :
>: Sorry, Zack, but I have to agree with Gary. In my experience working RS-10
>: over the past few years, a simple vertical antenna works best.
[snip]
>According to my calculations, the minimum you need to work MIR
>(height nominally 400 km) is 10 milliwatts to an antenna with 0
>dBi gain straight up. I made the assumption that the astronaut
>isn't an FM DXer, and isn't used to pulling weak FM signals out
>of the noise (-118 dBm needed for a good signal)

That's a pretty good assumption. That's a 0.28 microvolt signal at
the MIR crew's Japanese transceiver, assuming their external "vertical"
antenna's gain equals out with their feedline loss. (I don't have exact
figures on those two items.) That should give them something on the
order of 12 db of quieting in their receiver for a 10 mW uplink ERP.
Just 3 db more signal would give over 20 db of quieting thanks to the
FM effect. So an uplink ERP of 20 mW should deliver armchair copy for
the overhead pass.

>Due to the increase in path loss, you need at least 15 dB more
>signal when MIR is at the horizon. This assumes that you have
>a clear horizon. When MIR is 8 degrees above the horizon, you
>still need 11 dB more signal than when it is overhead.

So you'd need about 1.26 watts ERP at the horizon, or about 0.5 watt
ERP at 8 degrees elevation to deliver a 20 db+ quieting signal to
MIR. If our poster had a typical 4 watt HT (he doesn't, he has a
10 watt rig at a fixed station due to license restrictions), then
he'd have plenty of signal margin down to the horizon *if he weren't
penalized by an antenna putting a null at the horizon*.

>Now, what does this mean in practical terms, since most people
>run more than 10 milliwatts? It just means that you probably
>have a 10 dB or so advantage if you are located in a good spot
>as opposed to someone on the edge of the footprint. This is where
>MIR is fundamentally different from RS-10. With RS-10, you can
>still work people if you are 10 dB weaker than the strongest
>stations. Signals 10 dB weaker in an FM receiver get covered up
>completely.

But since our poster has a radio delivering 30 db more power than
you postulate, he can easily put a full quieting signal to the
horizon if he isn't penalized by a poor antenna choice. It's certainly
true that FM capture means that stations only 3 db stronger will
take over the receiver on MIR, but this isn't a power war DXer pileup
we're talking about. From his location, our questioner is going to
be nearly the only station in the footprint. If there *are* others,
they can take turns in an orderly manner *if their window is large
enough*. It won't be if they can only use the very few moments of
the overhead pass. If they can use the full 12 minutes of visibilty
available to them, their chances of a contact improve greatly.

>A statistical analysis of possible MIR paths doesn't make
>sense to me. If I wanted to work MIR I would look at the
>actual paths and choose the best ones. Then I would make sure
>my antenna and location was appropriate for the path. The
>statistical analysis that might be useful is to analyze the
>locations of stations that have worked people in space, to
>see what places seem to have the edge.

The problem with that idea is that MIR, and SAREX, operating
schedules are erratic and not under your control, while the
laws of celestial mechanics are fixed, and also not under your
control. You don't know that they will be operating during the
two minutes of the sole overhead pass you can reach on any given
day, or that you could win a power war with a station with thousands
of watts ERP if they were operating at that moment. You've got at
least six passes each day where you'll be in the footprint, for at
least 12 minutes in one case, if you can access them when they are
less than 30 degrees above the horizon. So your window of opportunity
for catching them on the air, and not being monopolized by an alligator,

is much larger if you don't concentrate on just the overhead pass.

>If I was really serious I might even alter my travel plans
>a little to give myself a better chance. After all,
>traveling hundreds or thousands of miles for business
>or vacation isn't unusual anymore. Personally, I'd rather
>vacation in Hawaii than in New York City, even though it
>is a longer trip that makes carrying a carload of stuff
>difficult. Carrying something along to work MIR ought
>to be easy compared to bringing something to worth through
>Oscar 13.

Well with current MIR operating habits you'd have to travel
to Europe, and compete with the guys with thousands of watts
ERP, since that's the only time MIR is currently operational
due to their power problems. That's supposed to be fixed soon,
and we should be able to go back to having leisurely QSOs
with the cosmonauts any time they are above our local horizon.
It normally helps if you speak fluent Russian, though right
now you'd do better to speak German. The cosmonauts typically
aren't DXers, and like to chat, if you speak their language.
With their aviation English, hello-goodbye type contacts are
all you can expect if you don't speak their language. Remember
the amateur radio gear is on MIR for *their* recreation, not
your award chasing. Respect that.

Gary
--

```
Gary Coffman KE4ZV           |    You make it,     | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems  |    we break it.     | emory!kd4nc!ke4zv!gary
534 Shannon Way              |    Guaranteed!      | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244      |                     |
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End of Info-Hams Digest V94 #1188
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